RECLAMATION
Managing Water in the West

Draft Environmental Assessment

Enterprise Canal at Big Dry Creek Improvement Project Fresno Irrigation District Fresno County California

EA-08-89

U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
South Central California Area Office
Fresno, California

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Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Contents

List of Acronyms, Abbreviations, and Definition of Terms

af/y	acre-feet per year
cfs	cubic feet per second

CVP	Central Valley Project
FID	Fresno Irrigation District
FKC	Friant-Kern Canal
GMP	Fresno Area Regional Groundwater Management Plan
Grant	Water 2025 Challenge Grant
ITA	Indian Trust Assets
NMFS	National Marine Fisheries Service
Reclamation	Bureau of Reclamation
SIP	State Implementation Plan
Service	U.S. Fish and Wildlife Service
Waldron Pond	Waldron Banking facility

Section 1 Purpose and Need for Action

1.1 Background

The goal of Water 2025 Challenge Grant program is to prevent crises and conflict over water in the western United States. The Challenge Grant Program is designed to contribute to this goal by providing 50 percent funding for projects that will conserve water, increase water use efficiency, or enhance water management, using advanced technology, improvements to existing facilities, and water banks and markets. Fresno Irrigation District (FID) applied for a Challenge Grant in fiscal year 2008 for the Enterprise Canal at Big Dry Creek Improvement Project, Fresno, CA.

FID is located in the geographic center of Fresno County and extends from the San Joaquin River in the north, south to near the City of Fowler, and roughly from the Friant-Kern Canal (FKC) on the east to about 5 miles west of the City of Kerman. FID encompasses and provides service to approximately 245,000 acres and includes the Fresno/Clovis metropolitan area near its center.

The Enterprise Canal Company was constructed between 1870 and 1880 to deliver water from the Kings River to previously non-irrigated land in an area now located in northern Fresno and further west. The Enterprise Canal is 28 miles long and delivers surface water to the City of Fresno water treatment plant, irrigation water, and is also utilized for the disposal of storm water (See Figure 1-1 and 1-2). The cities of Fresno and Clovis constructed surface water treatment plants that receive water from the Enterprise Canal to serve their urban customers; it is the sole source of surface water supply for these two water treatment facilities.

It is estimated that storm water enters into the Enterprise Canal system upstream of the Proposed Action area one out of every three years for 60 days at an average flow rate of 20 cubic feet per second (cfs). This equates to an average annual amount of 800 af/y. Including storm water, more than 30,000 af/y of water is delivered through the Enterprise Canal past the Proposed Action location at the crossing of Big Dry Creek. This includes deliveries for groundwater recharge, irrigation purposes and for treatment at the City of Fresno's surface water treatment facility downstream of the site.

The existing structure and spillway into Big Dry Creek at the Proposed Action location was constructed in the 1910s.

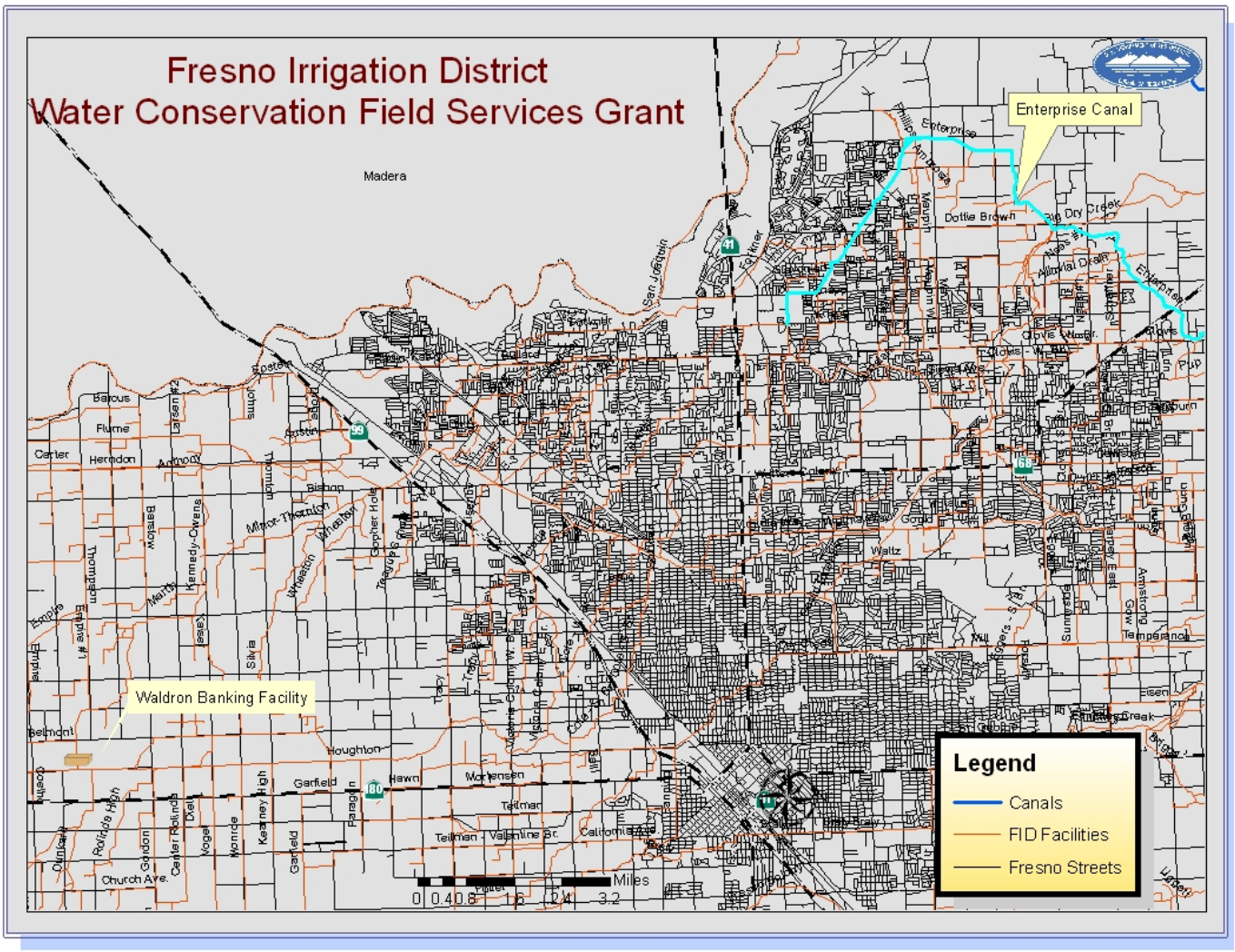

Figure 1-1 Location Map

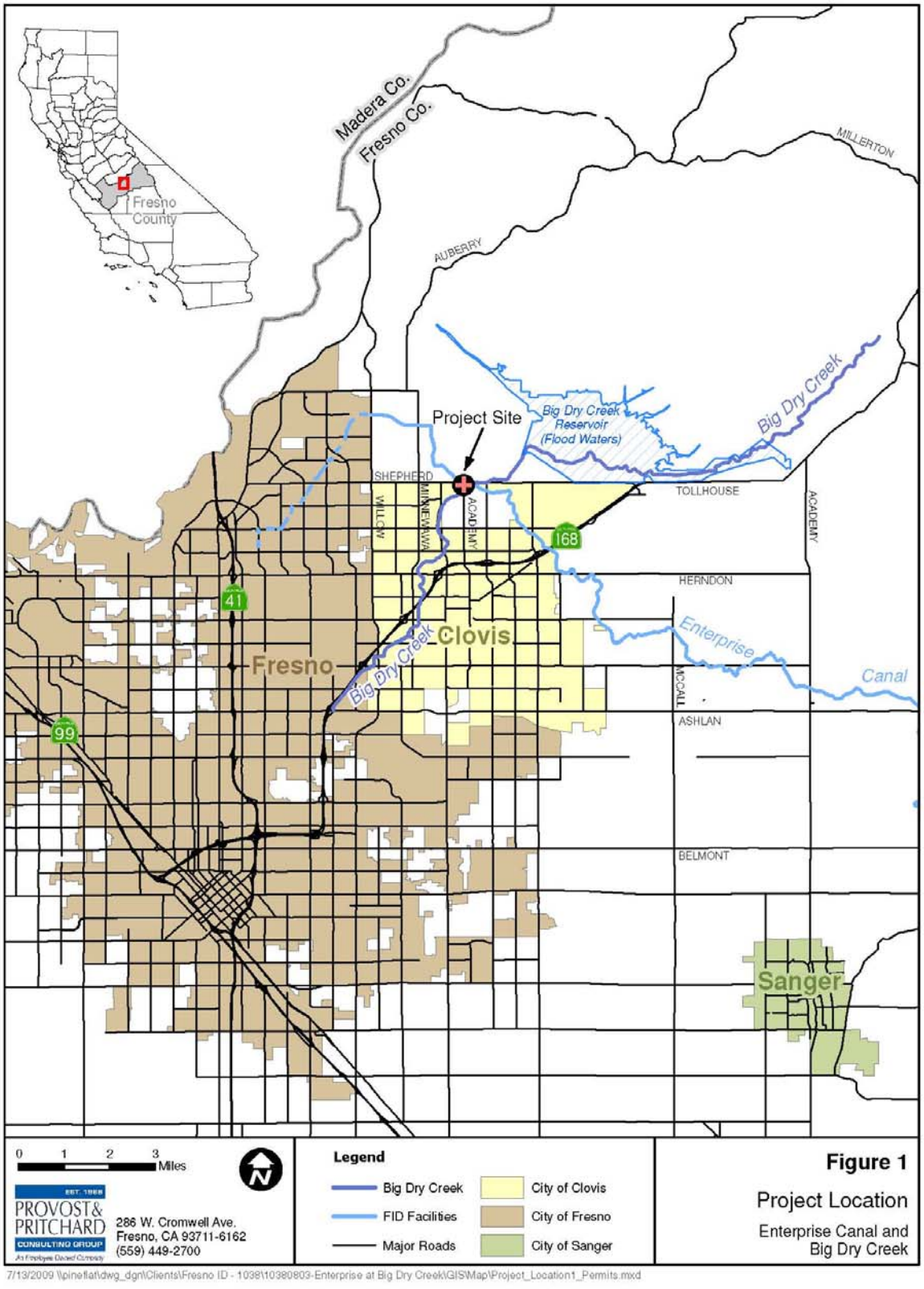

Figure 1-2 Proposed Action Area

1.2 Purpose and Need

The Enterprise Canal has decreased capacity downstream of its location, whereas improvement of delivery into the Big Dry Creek system would provide for increased opportunity to put diverted water to beneficial use. The purpose of the Proposed Action is to conserve water by controlling storm water runoff. This can be accomplished by improving control structures on the Enterprise Canal.

The treatment facility operations are subject to interruption due to turbid storm water flows in the canal, brown outs, and maintenance operations. Surface water en route to the treatment plant during shutdowns is potentially lost downstream of the site. Rather than allowing the water to spill into downstream systems, the automatic control gate installed in the Enterprise Canal would allow FID to control downstream flows and divert fluctuations into a system for direct delivery to growers, delivery to available recharge basins upgradient of the cone of depression, or to FID's banking facility. It is anticipated that as much as 5 percent or 1,500 af/yr may be diverted for these purposes.

FID needs a system that would allow water to be diverted to a conveyance system that can deliver water to FID's Waldron Pond. Once recharged into FID's Waldron Pond, FID would be able to pump groundwater, stored in the bank, to deliver to agricultural users downstream of the bank instead of delivering surface water to these users. The surface water would then be made available to market.

The Proposed Action is consistent with the recently adopted Fresno Area Regional Groundwater Management Plan (GMP). The GMP calls for improved water management and improved management and emphasizes projects that will better utilize storm water for conveyance to recharge and banking facilities.

1.3 Scope

The Bureau of Reclamation (Reclamation) is the federal lead agency under the National Environmental Policy Act. FID would construct, own, and operate the new facilities. However, construction of the Proposed Action would involve federal funds through the Water 2025 Challenge Grant (Grant) and Reclamation would be responsible for administering those funds.

The scope of this analysis is limited to the environmental impacts associated with the award of a Grant to replace existing facilities and installing new facilities on the Enterprise Canal.

1.4 Applicable Regulatory Requirements

The Proposed Action would require permits from the United States Army Corps of Engineers under section 404 of the Clean Water Act, and Water Quality Certifications pursuant to section 401 of the Clean Water Act from the California Regional Water Quality Control Board, Central Valley Region.

An update to the existing Memorandum of Understanding with the California Department of Fish and Game for Routine Maintenance Activities in Unimproved Channels and a modification to the existing Streambed Alteration Agreement would be required.

1.5 Potential Issues

- Surface Water Resources
- Groundwater Resources

- Air Quality
- Land Use
- Biological Resources
- Cultural Resources
- Indian Trust Assets
- Socioeconomic Resources
- Environmental Justice
- Global Climate Change

Section 2 Alternatives Including Proposed Action

2.1 Alternative A – No Action

Under the No Action Alternative, Reclamation would not award a Grant to FID to assist in the funding of the replacement of the existing diversion structure with new control and diversion structures in the Enterprise Canal at Big Dry Creek.

2.2 Alternative B - Proposed Action

Reclamation proposes to award a Grant to FID to partially fund improvements to the Enterprise Canal at Big Dry Creek. The Proposed Action involves funding the replacement of the existing siphon structure with new control and diversion structures that would allow improved water management of water that enters into the Enterprise Canal and is carried downstream. This includes construction of a new control structure on the Enterprise Canal with automatic control gates; construction of a new spill structure into Big Dry Creek with automatic control gates; replacement of the existing siphon structure; and connection to FID's telemetry system (see figures 2-1 and 2-2 for structures). Construction would begin in fall 2009 with completion anticipated for spring 2010. Construction equipment would consist of backhoe, excavator, front end loader, concrete trucks and pumper, and crane. Approximately 8-10 crew members would be involved.

The new control structure would be approximately 19 feet long by 24 feet wide and would be integral with a larger flume structure that would span Big Dry Creek. The overall length of the flume and downstream control structure would be approximately 100 feet by 24 feet. Approximately 500 cubic yards would be excavated along the bank slopes and filling in the channel bottom once the old siphon is removed, and concrete formed and cast in place. Excavation would be approximately four feet below channel bottom (primarily due to the removal of the existing siphon).

The automatic control gates would be installed by a contractor. The gates would be installed during construction when the canal is de-watered (typically during the months of November and December). The gates would be installed after the concrete has been poured. Construction of the new spill structure for Big Dry Creek would be integrated within the flume structure by notching the side wall of the flume lower on one side to allow water to spill by control of the automatic gates. The new telemetry system would connect to an existing 20-foot tall antenna tower on site. Conduit and wire would be run from the automatic gate and measurement devices to the electrical equipment housing an antenna tower.

The Proposed Action would also allow water to be diverted to a conveyance system that can deliver water to FID's Waldron Pond. Once recharged into FID's Waldron Pond, FID would pump

groundwater, stored in the bank, to deliver to agricultural users downstream of the bank instead of delivering surface water to these users. The surface water would then be made available to market.

The Proposed Action would be subject to the following conditions:

The water would not be used to place untilled or new lands into production, or to convert undeveloped land to other uses.

An update to the existing Memorandum of Understanding with the California Department of Fish and Game for Routine Maintenance Activities in Unimproved Channels and a modification to the existing Streambed Alteration Agreement would be required.

The Proposed Action would require permits from the United States Army Corps of Engineers under section 404 of the Clean Water Act, and Water Quality Certifications pursuant to section 401 of the Clean Water Act from the California Regional Water Quality Control Board, Central Valley Region.

Construction would require minor grading of the soils in the project site. After construction, runoff would be generated from the recently re-contoured drain banks. Therefore, the Proposed Action has the potential to affect water quality. FID would implement Best Management Practices (BMPs) to control or reduce the discharge of pollutants, reducing any impacts on water quality and downstream resources. Raw cement, concrete (including washings), coating materials, oil or petroleum products, or any other substances which could be hazardous to fish or wildlife resources shall be prevented from contaminating the soil and/or entering waters of the United States.

The following measures would be implemented at all construction sites to control construction Emissions of PM_{10}.

San Joaquin Valley Air Pollution Control District
Regulation VIII Control Measures for Construction Emissions of PM_{10}

Regulation VIII Control Measures. The following are required to be implemented at all construction sites.
All disturbed areas, including storage piles, which are not actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizers/suppressants, covered with a tarp or other similar cover, or vegetative ground cover.
All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions during construction using water or chemical stabilizer suppressant.
All land clearing, grubbing, scraping, excavation, land leveling, grading cut and fill, and demolition activities during construction shall be effectively controlled of fugitive dust emissions utilizing application of water or pre-soaking.
When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from top of container shall be maintained.
All operations shall limit, or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.
Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site at the end of each workday.
Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.

Figure 2-1 Big Dry Creek (southwest) at Existing Enterprise Siphon/Structure.

Figure 2-2 Downstream (northwest) Along Enterprise Canal at the Enterprise Canal Control Gates.

Section 3 Affected Environment & Environmental Consequences

3.1 Surface Water Resources

3.1.1 Affected Environment

FID typically delivers about 500,000 acre-feet per year (af/y) of surface water from the Kings and Fresno Rivers through the Friant Division of the Central Valley Project (CVP). Most of FID's water supplies are delivered to agriculture, although an increasing share is used for groundwater recharge in the urban area and direct delivery to two recently constructed surface water treatment plants. In addition to receiving surface water deliveries, individuals and the cities pump a significant amount of groundwater in and around FID to meet urban and agricultural demands.

FID has two primary diversion points along the Kings River. The headwork at Fresno Weir diverts water to the Fresno Canal, and the headwork at Gould Weir diverts water to the Gould Canal. The headwork capacities for the Fresno Canal and Gould Canal are 1,550 and 500 cfs, respectively. From these two canal locations, about 680 miles of FID conveyance facilities direct Kings River water throughout FID. Currently, there are still about 330 miles of open canal and the remainder has been pipelined. Along the conveyance system, there are approximately 4,000 customer turnouts and several hundred control and flow measurement structures maintained and operated by FID. Additionally, FID maintains and operates 30 regulating and recharge reservoirs totaling about 2,100 acres.

FID currently diverts some water into Big Dry Creek on a regular basis during the irrigation season for delivery to recharge facilities, as well as conveyance into other FID facilities. The Big Dry Creek channel is utilized much like a canal during the irrigation season.

During many storm events, there is limited capacity downstream on the Enterprise Canal to handle the flows from creeks and overland flow enters into the Enterprise Canal upstream of the Proposed Action site. FID and Fresno Metropolitan Flood Control District, together with the Army Corps of Engineers, have included this project in the master plan of several critical diversion locations and storm water protection facilities to manage storm water in the area. The master plan calls for a maximum diversion capacity form the Enterprise Canal into Big Dry Creek of 350 cfs based on a 200-year flood event.

FID currently has an agreement with the City of Clovis for delivery of water made available by FID's Waldron Banking facility (Waldron Pond). The agreement calls for up to 9,000 af/y to be made available, and the water from Big Dry Creek is a critical supply to meeting that target yield of the bank.

Waldron Pond is comprised of more than 200 acres; it is the first groundwater banking facility to be constructed within FID. The facility has an estimated recovery of 10,000 af/y. Waldron Ponds is located near Kerman, 15 miles west of Fresno. The facilities allow surface water from various sources to be recharged in wet years. In dry years, groundwater (or banked water) will be pumped from wells located at the facility and delivered for agricultural uses downstream of the facility. This allows Kings River surface water to be made available to project partners. As part of the banking operation, FID will pump no more than 90 percent of the banked water, leaving 10 percent for local recharge.

3.1.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not award a Grant to FID for the replacement of the existing diversion structure with new control and diversion structures. FID could still seek other financial partners or fund the Proposed Action themselves, which is outside the scope of this EA. Storm water would continue to be diverted from the Enterprise Canal.

Proposed Action

Under the Proposed Action, Reclamation would award a Grant to FID for the replacement of the existing diversion structure with new control and diversion structures that would allow improved water management of water that enters into the Enterprise Canal and is carried downstream. The diversion structure would allow FID to control and measure water diverted into the Big Dry Creek system. The diverted water would be delivered for irrigation or recharge purposes, and to FID's banking facility. FID would focus delivery of this water into the existing groundwater recharge facilities located along Big Dry Creek and upgradient of the groundwater cone of depression that has developed beneath the cities of Fresno and Clovis.

Improving control of the flowrate downstream to more accurately meet demand and handle flow fluctuations would increase the amount of water that would be diverted at this location and delivered to recharge and banking facilities.

The Proposed Action would also allow water to be diverted to a conveyance system that could deliver water to FID's Waldron Pond. Once recharged into Waldron Pond, FID would pump groundwater stored in the bank to deliver to agricultural users downstream of the bank instead of delivering surface water to these users. That surface water would then be made available to market.

The Proposed Action would allow water potentially lost down the Enterprise Canal during shutdowns to be utilized at recharge basins along Big Dry Creek. There would be no adverse impacts to surface water resources.

3.2 Groundwater Resources

3.2.1 Affected Environment

The Proposed Action area overlies the Kings Groundwater subbasin, which the California Department of Water Resources (Bulletin 118-80) has categorized the Kings Groundwater Basin as a critically overdrafted groundwater basin. Historically, excess water applied by farmers has percolated beyond the root zone and recharged the extensive aquifer underlying FID. Between 85 and 90 percent of the groundwater supply can be attributed to water imported and distributed by FID. Nevertheless, the conversion of agricultural lands to high-density urban uses in the expanding Fresno-Clovis metropolitan area has reduced the capacity to utilize surface water because all municipal and industrial water is obtained by pumping groundwater. A local overdraft has developed in and around the urban area, and this situation has been exacerbated by the drought of the late 1980s and early 1990s.

The Fresno/Clovis metropolitan area has seen depths to groundwater drop 1-2 feet per year for several years and FID has estimated the groundwater overdraft to be approximately 20,000 af/y.

3.2.2 Environmental Consequences

No Action

Reclamation would not award a Grant to FID for the replacement of the existing diversion structure with new control and diversion structures. FID could still seek other financial partners or fund the Proposed Action themselves. Storm water would continue to be diverted from the Enterprise Canal. There would be no adverse impacts due to the No Action Alternative.

Proposed Action

The Proposed Action would help alleviate some of the strain felt by all groundwater users in the area by helping to sustain the groundwater levels adjacent to and within FID.

In addition, by providing the City of Clovis surface water through the banking project, the City of Clovis would be less dependent on groundwater supply. Banked water would be made available to Clovis during dry years, reducing the City of Clovis' need to purchase water from other sources during those years. This would be a slight benefit to groundwater resources. Therefore, there would be no adverse impacts from the Proposed Action.

3.3 Air Quality

3.3.1 Affected Environment

The Proposed Action lies within the San Joaquin Valley Air Basin (SJVAB), the second largest air basin in California. Air basins share a common "air shed," the boundaries of which are defined by surrounding topography. Although mixing between adjacent air basins inevitably occurs, air quality conditions are relatively uniform within a given air basin. The San Joaquin Valley experiences episodes of poor atmospheric mixing caused by inversion layers formed when temperature increases with elevation above ground, or when a mass of warm, dry air settles over a mass of cooler air near the ground. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been established for the following criteria pollutants: carbon monoxide (CO), ozone (O3), sulfur dioxide (SO2), nitrogen dioxide (NO2), particulate matter (PM10 and PM2.5), and lead (Pb). The CAAQS also set standards for sulfates, hydrogen sulfide, and visibility.

Despite years of improvements, the SJVAB does not meet state and federal health-based air quality standards. The San Joaquin Valley (SJV) is designated as a State and Federal non-attainment area for O3, and PM2.5, and a State an The San Joaquin Valley (SJV) is designated as a State and Federal non-attainment area for O3, and PM2.5, and a State and Federal attainment area for CO, SO2, NO2, and Pb. The SJV is designated a Non-attainment area by State standards and an attainment area by Federal standards for PM10. To protect health, the San Joaquin Valley Air Pollution Control District (SJVAPCD) is required by federal law to adopt stringent control measures to reduce emissions.

Section 176 (C) of the Clean Air Act [CAA] (42 U.S.C. 7506 (C)) requires any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the Federal Clean Air Act (42 U.S.C. 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards (NAAQS) and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements will, in fact conform to the applicable SIP before the action is taken.

On November 30, 1993, the Environmental Protection Agency (EPA) promulgated final general conformity regulations at 40 CFR 93 Subpart B for all federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by the Proposed Action equal or exceed certain de minimis amounts thus requiring the federal agency to make a determination of general conformity.

The following de minimis thresholds covering the Proposed Action are presented in Table 1.

Table 3-1 Proposed Project Operation and Construction Emissions

	ROG (tons/year)	NO_x (tons/year)	PM_{10} (tons/year)
Total Project Construction Emissions	**0.15**	**0.83**	**0.06**
Threshold of Significance	**10**	**10**	**--**

Source: URBEMIS Model, Version 9.2.4 2007

3.3.2 Environmental Consequences

No Action

Reclamation would not award a Grant to FID for the replacement of the existing diversion structure with new control and diversion structures. FID could still seek other financial partners or fund the Proposed Action themselves.

Proposed Action

Under the Proposed Action, Reclamation would award a Grant to FID for the replacement of the existing diversion structure with new control and diversion structures. The results of the air quality analysis in Table 3-1 indicate that no State of California air quality standards would be exceeded. Under the Proposed Action, FID would comply with SJAPCD's Regulation VIII which would reduce air quality impacts. Therefore, the Proposed Action would have no adverse impacts to air quality.

3.4 Land Use

3.4.1 Affected Environment

The agricultural lands in FID remain predominantly permanent crops (about 69 percent). The predominant crop in FID is grapes. Grape vineyards make up nearly 30 percent of the total FID acreage. Nuts, citrus, and deciduous fruits have also increased as cotton and pasture has declined. The conversion of agricultural lands to urban uses in the expanding Fresno-Clovis metropolitan area has increased in recent years and has reduced the amount of agricultural crops as the land has been converted. Currently, about 150,000 acres or 60 percent of FID remain as farmed agricultural land. Nearly 30 percent of FID is now urban, with the remaining 10 percent of land area classified as rural residential.

3.4.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not award a Grant to FID for the replacement of the existing diversion structure with new control and diversion structures. FID could still seek other financial partners or fund the Proposed Action themselves. Storm water would continue to be diverted from the Enterprise Canal. Land use would not change.

Proposed Action

The Proposed Action involves construction activities to replace and improve an existing facility. The Proposed Action would allow the continuation of diverting water from the Enterprise Canal. The Proposed Action would continue to divert storm water from the Enterprise Canal for delivery to downstream agricultural users, recharge basins, or FID's groundwater banking facility. The Proposed Action would not interfere with current operations or obligations to deliver water to other users. The storm water is available intermittently and would not result in decisions for long-term land use changes. This water would support existing agricultural, municipal and industrial users. Therefore, there would be no adverse impacts to land use.

3.5 Biological Resources

3.5.1 Affected Environment

Special status species are plants and animals that are legally protected under the State and Federal Endangered Species Acts or other regulations, and other species that are considered rare by the scientific community. A species list (See Table 3-1.) was generated on October 9, 2009 (Document #091009103429) by accessing the U.S. Fish and Wildlife Service (Service) Database: http://www.fws.gov/sacramento/es/spp_list.htm and the California Department of Fish and Game Natural Diversity Database (CDFG 2009). The list is for the following USGS 7½ minute quadrangles: Sanger, Malaga, Fresno South, Kearney Park, Kerman, Academy, Friant, Clovis, Round Mountain, Lanes Bridge, Herndon, Fresno North, and Biola.

Sensitive Species Located In Quadrangles Covering FID.

Common Name	*Scientific Name*	*Status*[1]	*Effects*[2]	*Occurrence in the Study Area*[3]
Amphibians				
California red-legged frog	*Rana aurora draytonii*	FT	NE	**Absent.** No individuals or habitat in area of effect.
California tiger salamander, central population	*Ambystoma californiense*	FT, CC, X	NE	**Possible.** CNDDB records indicated this species upland from Canal along Big Dry Creek taken 2-26-2006 CNDDB[4]. Critical habitat not present in area of effect.
Birds				
western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FC, CE	NE	**Absent.** CNDDB records indicated this species is believed to be extirpated from area. Not expected to occur close enough to croplands to colonize bare soil.
Western burrowing owl	*Athene cunicularia*	MB	NE	**Absent.** No individuals or habitat in area of effect.
Fish				
Central Valley steelhead	*Oncorhynchus mykiss*	FT NMFS	NE	**Absent**. No natural waterways within the species' range will be affected by the proposed action.
delta smelt	*Hypomesus transpacificus*	FT	NE	**Absent**. No natural waterways within the species' range will be affected by the proposed action.

Invertebrates				
Conservancy fairy shrimp	*Branchinecta conservatio*	FE	NE	**Absent.** No individuals or habitat in area of effect.
valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	NE	**Absent.** No effect to habitat for this species. No land use changes would occur as a result of this action.
vernal pool fairy shrimp	*Branchinecta lynchi*	FT, X	NE	**Absent.** No individuals or habitat in area of effect.
vernal pool tadpole shrimp	*Lepidurus packardi*	X	NE	**Absent.** No individuals or habitat in area of effect.
Mammals				
Fresno kangaroo rat	*Dipodomys nitratoides exilis*	FE, CE, X	NE	**Absent.** No individuals or habitat in area of effect. Disturbed agricultural lands do not provide habitat.
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, CT	NE	**Possible.** CNDDB records indicate this species occurs near the project area. The area could possible be uses for movement.
Plants				
hairy Orcutt grass	*Orcuttia pilosa*	FE, CE, X	NE	**Absent.** Does not inhabit croplands or lands fallowed and untilled for less than three years
Hartweg's golden sunburst	*Pseudobahia bahiifolia*	FE, CE	NE	**Absent.** No individuals or habitat in area of effect.
San Joaquin adobe sunburst	*Pseudobahia peirsonii*	FT, CE	NE	**Absent.** No individuals or habitat in area of effect.Not expected to occur close enough to croplands to colonize bare soil.
San Joaquin Valley Orcutt grass	*Orcuttia inaequalis*	FT, CE, X	NE	**Absent.** No individuals or habitat in area of effect.
succulent (=fleshy) owl's-clover	*Castilleja campestris ssp. succulenta*	FT, CE, X	NE	**Absent.** CNDDB records indicated this species is believed to be extirpated from area.
Reptiles				
blunt-nosed leopard lizard	*Gambelia (=Crotaphytus) sila*	FE, CE	NE	**Absent.** No individuals or habitat in area of effect.
giant garter snake	*Thamnophis gigas*	FT, CT	NE	**Absent.** Species believed to have been extirpated from Tulare Basin.

1 Status= Listing of special status species, unless otherwise indicated
CE: California listed as Endangered
CT: California listed as Threatened
FE: Federally listed as Endangered
FT: Federally listed as Threatened
FT NMFS: Federally listed as Threatened by National Marine Fisheries Service
MB: Birds protected by the Migratory Bird Treaty Act
X: Critical Habitat designated for this species
2 Effects = Effect determination
NE: No Effect
MN: May effect, not likely to adversely affect
3 Definition Of Occurrence Indicators
Present: Species recorded in area
Absent: Species not recorded in study area and/or habitat requirements not met
4 CNDDB = California Natural Diversity Database provided by CDFG 2009

Table 3-2 Species List

California Tiger Salamanders

The California tiger salamander, Central distinct population segment was federally listed as threatened in August 2004. These salamanders spend the majority of their subadult and adult lives in upland habitats. California tiger salamanders are found in the Central Valley and adjacent foothills and prefer open grassland habitat types to areas with continuous woody vegetation (Barry and Shaffer 1994), usually within 1 mile of water (Jennings and Hayes 1994). There appears to be a strong association between grazed communities, burrowing mammals, especially ground squirrels, and the presence of California tiger salamanders. Adult salamanders primarily use the burrows of California ground squirrel and valley pocket gophers as their underground retreats (Barry and Shaffer 1994, Trenham 2001).

Salamanders will migrate to breeding sites from November to December (Barry and Shaffer 1994). Breeding sites are usually ephemeral ponds that fill during winter and dry in the summer. Larvae grow quickly and will leave their natal ponds for upland terrestrial habitat in late spring to early summer.

The California tiger salamander is endemic to California and the historical presence probably includes grassland habitats throughout much of the state. Habitat loss and fragmentation from urban and agricultural development, land conversion, and other human-caused factors are the primary causes for decline of California tiger salamander populations. They are also heavily preyed upon by predatory fish and bullfrogs (Fisher and Shaffer 1996). Habitat within the Proposed Action area does not contain vernal pools but low spots in the Proposed Action area may pond water in years of greater than normal rainfall.

There is only one record for California tiger salamander within 3.1 mile radius of the Proposed Action area, located just over a mile northeast of the project site and about a quarter of a mile from Big Dry Creek (CDFG 2009). Dispersal barriers between the known occurrence for tiger salamander and the Proposed Action area exist and include Fresno City Streets (Sheppard Ave. and Fowler Ave.) and residential and commercial communities.

No measurable impact from the Proposed Action is anticipated due to a history of habitat disturbance in the area and drought conditions. Aquatic habitat used by the tiger salamander for breeding and rearing will not be disturbed (FWS 2005). Also, any upland habitat essential for growth, feeding, resting and aestivation will not be destroyed or degraded

San Joaquin Kit Fox

The San Joaquin kit fox is federally listed as an endangered species. There is no critical habitat designated. They are the smallest canid species in North American, weighing on average 5 lbs.

Their diet varies based on prey availability, and includes small to mid-sized mammals, ground-nesting birds, and insects. Kit foxes excavate their own dens or will use other animals and human-made structures (culverts, abandoned pipelines, and banks in sumps or roadbeds). Natal dens are constructed from September to October. Mating season occurs between late December and March (Egoscue 1956).

Historically, San Joaquin kit foxes occurred throughout the Central Valley. They currently inhabit western and southern San Joaquin valley in grassland and scrubland communities (FWS 1998, Warrick et al. 2007). Loss and degradation of habitat are the primary reasons for the species' decline. Pesticide and rodenticides also have contributed detrimental to kit fox populations (USFWS 1998).

San Joaquin kit fox could use the area along Enterprise Canal for movement. Nearby, there are a few kit fox sightings recorded over 10 years ago (CNDDB 2009). This area of Fresno County has had extensive urban development in the last 10 years. Current habitat quality is fairly poor as their preferred prey, kangaroo rats, does not occur in this area.

3.5.2 Environmental Consequences

No Action

Under the No-Action Alternative, it is anticipated that current conditions would remain the same. No changes in conditions or habitats would occur under the No Action Alternative. Operations and water management practices would not change. Therefore, the No Action Alternative would not result in changes to biological resources or habitats.

Proposed Action

Under the Proposed Action, because of the absence of native habitat and special-status species, the Proposed Action would not impact these resources. Construction activities would occur when the canal and creek are dewatered. The Proposed Action site has been disturbed in the past. The diversion and conveyance of this water would occur in existing facilities. No new water supplies would be created. The water would be available intermittently and would not lead to long-term land use changes. The water would be delivered to lands that have already been disturbed. The water would not be used to place untilled or new lands into production, or to convert undeveloped land to other uses. The Proposed Action would have no effect on federally listed species. Therefore, there will be no adverse impact from the Proposed Action.

3.6 Cultural Resources

3.6.1 Affected Environment

Cultural Resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The San Joaquin Valley is rich in historical and pre-historic cultural resources. Cultural resources in this area are generally prehistoric in nature and include remnants of native human populations that existed before European settlement. Prior to the 18th Century, many Native American tribes inhabited the Central Valley. It is possible that many cultural resources lie undiscovered across the valley.

Section 106 of the National Historic Preservation Act requires federal agencies to evaluate the effects of federal undertakings on historical, archaeological and cultural resources.

The Enterprise Canal Company was constructed between 1870 and 1880 to deliver water from the Kings River to previously non-irrigated land in an area now located in northern Fresno and further west. Between 2003 and 2004, FID dredged the Enterprise Canal, constructed measuring stations with telemetry, rebuilt the automated canal headgate structure, increased Enterprise Canal by 10 cfs, repaired flumes, and removed abandoned bridges.

The existing structure and spillway into Big Dry Creek at the Proposed Action location was constructed in the 1910s.

3.6.2 Environmental Consequences

No Action

Under the No Action Alternative, no impacts to cultural resources would occur.

Proposed Action

The Proposed Action involves construction at a site that has been heavily disturbed in the past. It is unlikely that cultural resources exist. Nevertheless, the Proposed Action involves removing and replacing a facility that is eligible for listing on the National Register of Historic Places. Reclamation is consulting with the State Historic Preservation Officer (SHPO) to discuss the significance of this facility and potential for preserving it. No construction of new facilities or destruction of existing facilities would occur until the consultation with SHPO has concluded.

3.7 Indian Trust Assets

3.7.1 Affected Environment

Indian trust assets (ITA) are legal interests in assets that are held in trust by the U.S. Government for federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the interior is the trustee for the United States on behalf of federally recognized Indian tribes. “Assets” are anything owned that holds monetary value. “Legal interests” means there is a property interest for which there is a legal remedy, such a compensation or injunction, if there is improper interference. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something. Indian trust assets can not be sold, leased or otherwise alienated without United States’ approval. Trust assets may include lands, minerals, and natural resources, as well as hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, Indian trust assets may be located off trust land.

Reclamation shares the Indian trust responsibility with all other agencies of the Executive Branch to protect and maintain Indian Trust assets reserved by or granted to Indian tribes, or Indian individuals by treaty, statute, or Executive Order.

The nearest ITA is Table Mountain Rancheria, approximately eight miles north northeast of the Proposed Action.

No Action

Under this alternative, no construction would take place. Therefore, there would be no impacts to any ITA.

Proposed Action

No ITA are involved in the Proposed Action, therefore the Proposed Action would not affect ITA.

3.8 Socioeconomic Resources

3.8.1 Affected Environment

Fresno is currently California's sixth largest city. According to the U.S. Census Bureau (2000), the estimated population for 2006 was 466,714.

Located in the northeast quadrant of the Fresno-Clovis Metropolitan Area, Clovis is situated in the midst of the agriculturally rich San Joaquin Valley. According to the U.S. Census Bureau (2000), the estimated population for 2006 was 89,316.

3.8.2 Environmental Consequences

No Action

Under the No Action Alternative, no long-term or major changes in socioeconomic conditions would occur as storm water would be managed similar to historic practices. There would not be a method to better conserve this runoff.

Proposed Action

The Proposed Action would allow storm water to be managed similar to historic practices. The Proposed Action is a water conservation project that would allow greater flexibility in beneficial uses. Due to the unreliable availability of storm water, the Proposed Action would not result in major changes to existing socioeconomic conditions. Therefore, there would be no adverse impacts from the Proposed Action.

3.9 Environmental Justice

3.9.1 Affected Environment

Executive Order 12898, dated February 11, 1994, requires Federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations. Many agricultural jobs require unskilled labor and the pay tends to be low. The employment opportunities for agricultural jobs draw low income and minority populations. The farm workers reside in surrounding communities.

3.9.2 Environmental Consequences

No Action

Employment opportunities and conditions for low-income or disadvantaged populations would be within historical conditions under the No Action Alternative.

Proposed Action

The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease. The Proposed Action would not disproportionately impact economically disadvantaged or minority populations. Employment opportunities for low-income wage earners and minority population groups would be within historical conditions. Disadvantaged populations would not be subject to disproportionate impacts. Therefore, the Proposed Action would not adversely effect disadvantaged populations.

3.10 Global Climate Change

3.10.1 Affected Environment

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change (changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.). (Environmental Protection Agency [EPA] 2008a)

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHG (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are: carbon dioxide (CO_2), methane (MH_3), nitrous oxide, and fluorinated gasses (EPA 2008a).

During the past century humans have substantially added to the amount of GHG in the atmosphere by burning fossil fuels such as coal, natural gas, oil and gasoline to power our cars, factories, utilities and appliances. The added gases, primarily CO_2 and MH_3, are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes. There are uncertainties associated with the science of climate change (EPA 2008b).

More than 20 million Californians rely on the SWP and CVP. Increases in air temperature may lead to changes in precipitation patterns, runoff timing and volume, sea level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to impacts to California's water resources and project operations.

While there is general consensus in their trend, the magnitudes and onset-timing of impacts are uncertain and are scenario-dependent (Anderson et al. 2008a).

3.10.2 Environmental Consequences

No Action

Implementation of the No Action Alternative would have no change on the composition of the atmosphere and therefore would have no direct or indirect effects to climate.

Proposed Action

Change in hydrology could lead to more severe storms and dryer conditions: 1) there could be impacts to facilities if they cannot handle large storms and 2) periods of drought means there would be less storm water to store.

The awarding of a Grant indirectly influences greenhouse gas emissions but by only marginal amounts. There is a potential for global climate change impacts to the Proposed Action. However, the construction of the replacement facilities would be a short term project; climactic conditions would not be much different from the current climactic conditions. Therefore, there would be no adverse impacts to global climate change.

3.11 Cumulative Effects

Modifications and improvements to facilities are ongoing to replace or improve aging facilities or as new technologies are made available.

Between 2003 and 2004, FID dredged the Enterprise Canal, constructed measuring stations with telemetry, rebuilt the automated canal headgate structure, increased Enterprise Canal by 10 cfs, repaired flumes, and removed abandoned bridges.

In 2006, FID was awarded a grant to construct a new control structure on the Enterprise Canal with automatic control gates, construction of a new spill structure into Fancher Creek with automatic control gates, replace the existing flume structure, and connect to FID's telemetry system (Reclamation 2006).

Currently, Reclamation is in the process of awarding a grant to FID to purchase and install an automatic canal gate and the necessary telemetry equipment required for remote flow rate monitoring at a crucial location on the Lower Dry Creek Canal. The project also includes the installation of a lift pump in Jameson Pond at the outlet side to re-regulate flows in Lower Dry Creek Canal (Reclamation 2008).

The Proposed Action when added to other projects would not result in long-term changes in overall water supplies. The Proposed Action would continue to use storm water when available. Therefore, the Proposed Action would not result in cumulative impacts to water quality or quantity.

The Proposed Action is similar to other ongoing and planned projects to repair existing facilities and improve the flexibility and options to use available water supplies. No new water supplies would be created. The Proposed Action would not contribute to cumulative impacts to groundwater quality or quantity.

The Proposed Action, when added to past, present and future actions would not result in cumulative impacts to biological resources. Construction activities would occur within existing facilities and occur when the Enterprise Canal and Big Dry Creek are dewatered. The Proposed Action would not interfere with implementation and compliance with existing Biological Opinions or operational practices to protect fish and wildlife resources. The Proposed Action would have no direct or indirect impacts on special-status biological resources, and therefore it would not contribute cumulatively to impacts on these resources in the project area.

Section 4 Consultation and Coordination

4.1 Fish and Wildlife Coordination Act (16 USC . 651 et seq.)

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. The Proposed Action does not involve water development construction projects. Therefore the FWCA does not apply.

4.2 Endangered Species Act (16 USC. 1531 et seq.)

Section 7 of the ESA requires Federal agencies, in consultation with the Secretary of the Interior/Commerce, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

Reclamation has determined that the Proposed Action would have no effect to federally listed or proposed species or critical habitat. Therefore, no consultation is required with Service. No anadromous fishes or their critical habitat occur in the affected area, and so no consultation with the NMFS is needed.

4.3 National Historic Preservation Act (16 USC 470 et seq.)

Cultural Resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The San Joaquin Valley is rich in historical and pre-historic cultural resources. Cultural resources in this area are generally prehistoric in nature and include remnants of native human populations that existed before European settlement. Prior to the 18th Century, many Native American tribes inhabited the Central Valley. It is possible that many cultural resources lie undiscovered across the valley.

Section 106 of the National Historic Preservation Act requires federal agencies to evaluate the effects of federal undertakings on historical, archaeological and cultural resources.

Reclamation is consulting with SHPO to discuss the significance of this facility and potential for preserving it. No construction of new facilities or destruction of existing facilities would occur until the consultation with SHPO has concluded.

4.4 Indian Trust Assets

ITA are legal interests in property held in trust by the United States for federally-recognized Indian tribes or individual Indians. An Indian trust has three components: (1) the trustee, (2) the beneficiary, and (3) the trust asset. ITA can include land, minerals, federally-reserved hunting and fishing rights, federally-reserved water rights, and in-stream flows associated with trust land. Beneficiaries of the Indian trust relationship are federally-recognized Indian tribes with trust land; the United States is the trustee. By definition, ITA cannot be sold, leased, or otherwise encumbered without approval of the United States. The characterization and application of the United States trust relationship have been defined by case law that interprets Congressional acts, executive orders, and historic treaty provisions.

There are no tribes possessing legal property interests held in trust by the United Sates under this action.

4.5 Migratory Bird Treaty Act (16 USC 703 et seq.)

The Migratory Bird Treaty Act implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the Act, the Secretary of the Interior (Secretary) may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

The Proposed Action would have no effect on birds protected by the Migratory Bird Treaty Act.

4.6 Executive Order 11988 – Floodplain Management and Executive Order 11990 - Protection of Wetlands

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands. This action would not adversely affect floodplains or wetlands.

Section 6 List of Preparers and Reviewers

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Section 7 References

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